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| 10/735,467 | 12/12/2003 | Chandrakant D. Patel | 200209754-1 | 4316 |

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| EXAMINER |
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DATSKOVSKIY, MICHAEL V

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| ART UNIT | PAPER NUMBER |
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2835

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/735,467

Applicant(s)

PATEL, CHANDRAKANT D.

Examiner

Michael V. Datskovskiy

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) ____ is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ~~04/12/06~~ 04/12/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-23 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 7-11, 13-16, 24, 26-27 and 29-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Weiss.

With respect to claim 1, Weiss teaches an apparatus, Figs. 1-9, for cooling a plurality of assemblies, an enclosure configured to form a plurality of tiers 1 stacked in along a longitudinal dimension (Fig. 9 shows three tiers 1), the plurality of tiers 1 including a first tier; wherein each tier 1 of the plurality of tiers has opposite first and second longitudinal ends 8 with respect to the longitudinal dimension, wherein each tier 1 is configured to support one or more assemblies of the plurality of assemblies, and wherein the one or more assemblies that the first tier is configured to support comprise a plurality of planar cards 3 stacked along a first lateral dimension with respect to the longitudinal dimension- across the first tier, wherein the enclosure defines a distribution plenum 20' longitudinally contiguous to the first (bottom) longitudinal end of the first tier, the distribution plenum being configured to distribute received coolant through the first

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longitudinal end of the first tier, wherein the enclosure further defines an exhaust plenum 20 longitudinally continuous to the second (upper) longitudinal end of the first tier, the exhaust plenum being configured to channel away coolant received from the second longitudinal end of the first tier: and wherein the enclosure is configured such that coolant supplied to the distribution plenum 20' is received into the enclosure in a direction along a second lateral dimension with respect to the longitudinal dimension. and such that coolant received by the exhaust plenum 20 is channeled out of the enclosure in the direction along the second lateral dimension. With respect to claim 7, Weiss teaches furthermore the apparatus of claim 1, wherein the enclosure further defines a separate distribution plenum 20' for each tier, each distribution plenum being contiguous to the first longitudinal end of its respective tier, and being configured to distribute received coolant through the first longitudinal end of its respective tier. With respect to claim 8, Weiss teaches furthermore the apparatus of claim 7, wherein the enclosure is configured such that coolant supplied to each distribution plenum 20' is drawn laterally into the enclosure, with respect to the longitudinal dimension, at a level-side location longitudinally adjacent the distribution plenum 20'. With respect to claim 9, Weiss teaches furthermore the apparatus of claim 7, wherein the enclosure further defines a separate exhaust plenum 20 for each tier, each exhaust plenum being contiguous to the second longitudinal end of its respective tier, and being configured to channel away coolant received from the second longitudinal end of its respective tier. With respect to claims 10-11, Weiss teaches furthermore the apparatus of claim 9, wherein the enclosure is configured such that coolant received by the exhaust plenum

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20 is channeled laterally out of the enclosure, with respect to the longitudinal dimension, at a level-side location longitudinally aligned with the exhaust plenum 20; and wherein the enclosure is configured such that coolant supplied to each distribution plenum 20' is drawn laterally into the enclosure, with respect to the longitudinal dimension, at a level-side location longitudinally adjacent the distribution plenum 20, and such that coolant received by the exhaust plenum is channeled laterally out of the enclosure, with respect to the longitudinal dimension, at a level-side location longitudinally aligned with the exhaust plenum. With respect to claims 13-14, Weiss teaches furthermore the apparatus of claim 1, wherein the distribution plenum 20' includes a wall 9 defining a boundary between the distribution plenum 20' and the first longitudinal end of the first tier, the wall 9 including a plurality of orifices 44 configured to direct coolant received by the distribution plenum through the first tier at selected locations, wherein the plurality of orifices are configured as a jets (nozzles on page 9, line 23). With respect to claim 24, Weiss teaches an apparatus, Figs. 1-9, for cooling a plurality of assemblies 3, comprising: an enclosure configured to form a plurality of tiers 1 stacked in a longitudinal dimension, the plurality of tiers including a first tier; wherein each tier of the plurality of tiers has opposite first and second longitudinal ends with respect to the longitudinal dimension; wherein each tier is configured to support one or more assemblies of the plurality of assemblies 3; wherein the enclosure defines a distribution plenum 20' longitudinally contiguous to the first longitudinal end of the first tier, the distribution plenum being configured to distribute received coolant through the first longitudinal end of the first tier; wherein the distribution plenum includes a wall 9

defining a boundary between the distribution plenum 20' and the first longitudinal end of the first tier, the wall 9 including a plurality of orifices 44 configured to direct coolant received by the distribution plenum through the first tier at selected locations; and wherein the plurality of orifices are configured as jets (nozzles on page 9, line 23).

With respect to claims 15-16 (dependent on claim 24) and 26-27, Weiss teaches furthermore, the apparatus of claim 24, wherein the jets direct streams of coolant toward the plurality of assemblies, said jets are point jets targeted at components (page 8, lines or said jets can be configured as slots that emit streams forming sheets of coolant. With respect to claim 27, Weiss also teaches the apparatus of claim 1, wherein said first lateral dimension is normal to said second lateral dimension. Regarding to claims 29-30: The method steps are necessitated by the device structure as Wong discloses it.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weiss.

Weiss teaches all the limitations of the claims except said jets emit coolant at a velocity of at least 4m/s (claim 17); or 6m/s (claim 18); or at least 6m/s and no more than 8 m/s (claim 19). It would have been obvious to one having ordinary skill in the art at the time invention was made to employ jets creating such a range of air velocity, since it has

been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Allowable Subject Matter

6. Claims 3, 25 and 28 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: The apparatus of claims 1 or 24 respectively, further comprising a pump configured to pump coolant such that it passes sequentially through the distribution plenum, the tier, and the exhaust plenum. wherein: the enclosure includes a pump plenum configured to laterally receive the coolant received into the enclosure; the pump is configured to receive coolant from the pump plenum'. and the tier is configured to receive coolant from the pump (claims 3 and 25); The apparatus of claim 1, wherein the one or more assemblies that the first tier is configured to support further comprise a second plurality of planar cards stacked along the first lateral dimension across the first tier, and further comprising a substantially non-vented mid-plane between the first and second plurality of planar cards, wherein the mid-plane is normal to the second lateral dimension (claim 28).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V. Datskovskiy whose telephone number is (571) 272-2040. The examiner can normally be reached on 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael V Datskovskiy
Primary Examiner
Art Unit 2835

06/13/2006